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ABSTRACT

As part of the activities establishing the National Institute of Education, a Planning Unit evolved to obtain advice from experts on what the objectives, activities, and organizational structures of the new organization should be. This overview, part of the Planning Unit studies, lists and analyzes educational problems. An introduction presents a brief discussion of some of the factors encountered in the work of the Planning Unit -- naming a problem, evidence, minimax nature of programs, cycling of causes, society and education, educational vs. system problems, and checks and cross checks. An outline proposes a system of analysis of educational problems to provide a context for ideas and public scrutiny. The main body of the paper deals with educational problems and educational system problems. Problems are stated, their symptoms and evidence discussed (incompletely), and note is made of questions raised by each problem. Educational problems which are considered are reading, mathematics, commitment to learning, motivation, curriculum, assessment, violence, and coping skills. System problems discussed are the quality of teaching, the rights of children, and research and development models. An appendix which will not reproduce clearly provides statistics as background information and a bibliography follows. (Author/KSM)

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Prepared for the Commissioner's
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Lipson. August,30, 1971

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AN OVERVIEW OF EDUCATIONAL PROBLEMS

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August 30, 1971

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Introduction. There are many difficulties in listing and analyzing educational problems. The overview will be preceded by a brief discussion of some of the factors which have been encountered thus far in the work of the planning unit. These include the following:

- o naming a problem
- o evidence
- o minimax nature of programs
- o cycling of causes
- o society and education
- o educational vs. system problems
- o checks and cross checks

Naming a problem. Depending upon values and the assessment of the situation, information may be interpreted as representing (a) a symptom of a problem, (b) a problem, or (c) a reasonable and acceptable level of a class of events. For example, an apparent increase in violence in schools and cities may be a symptom of a major disaffection with the establishment or society; it may be a major problem in its own right; it may be merely a false effect of better record keeping; or it may be an acceptable indicator of the greater individual liberty and affluence which in turn can be associated with the increased militancy of some groups.

A problem is a problem, then, because it is thought to be a problem in the minds of men. Thus values become an intrinsic part of any educational problem analysis. Values, the inferences of values, and the diversity and multiplicity of values among majority and minority elements are extremely difficult to assess. When we go ahead and discuss problems we must be aware of the tricky ground which we tread upon. We must be prepared to re-open the discussion and re-analyze when new arguments and new evidence come to light.

Evidence. Our analysis rests upon both implicit and explicitly stated evidence. Certain statistics and observations get transformed into a kind of popular mythology which is dangerous to the integrity of the analysis. Attention to statistics may generate a program which has effects which are worse than the problem to be solved. For example, some parts of the welfare system seem to have this property. People on welfare are penalized for initiative and productivity and thus are kept in a dependent state. Statistics

about able bodied men living in the homes of women receiving welfare led to regulations which generated spying, lying, and the break-up of important human relationships.

Minimax Nature of Programs. We often act as new programs were all to the good. This is not true even under the best of circumstances. Every program has its price. Time and energy are taken from other activities: people's lives are diverted. Resources that could be used in other ways are allocated to the program under consideration. Solutions are applied to situations and people for whom the program is inappropriate. Especially in education we are trying to maximize certain effects while minimizing certain other effects.

For example, when almost everyone has a high school diploma we may make life miserable for the remaining few who do not complete high school. Thus "success" always has its irredicible cost and the concept of "success" becomes more ambiguous. In particular, an assessment of the negative aspects, unanticipated side-effects, ramifications and costs of the positive aspects of a program should constantly be taking place. In order to improve the program accounting of costs and benefits, criticism that has any element of truth should be accorded a high value.

Primary and Secondary Problems. Problems and Causes. Cycling of Causes at Different Levels. As soon as a problem such as the Miseducation of the Disadvantaged begins to be analyzed, several causes are put forward. Any attempt to deal with the causes immediately elevates the causes to problems to be solved. For example, if malnutrition is put forth as a cause of the educational deficit of the disadvantaged, then getting adequate nutrition delivered to the poor and disadvantaged becomes a problem.

Until a state function is available which describes the system we are dealing with in terms of relevant variables (many times the relevant variables are yet to be discovered), it is difficult to assign coupling coefficients or coefficients of importance to the causes. It often depends on the rawest kind of intuition to establish a priority list. As will be seen, the chaotic situation of our knowledge of our society and the relationships between educational factors is, in itself, an argument for the kind of NIE which we envision. However, uncertainty does place limitations on the analytic process which should not be hidden.

A cause may appear at several different levels of an analysis. For example, poor nutrition may appear as a primary biological factor in poor development and poor learning ability. It may also re-appear in an analysis of the education of the disadvantaged

when we examine the psychological significance of food. Thus, because of complex interrelationships among causes and events an analysis is never "clean".

Society and Education. Some people have said that the U.S. will not be able to get its educational house in order until we get our society in order. Others look to education as a prime element in any effort to improve the quality of our culture and our society. We can rephrase the issue by saying that the interaction between education and society is so pervasive that we cannot pretend to deal with one without dealing with the other. The linkages between education and society are such that any significant change in the educational process (for young or old) may automatically call for debate and discussion which might appropriately be termed a program of adult education.

Educational Problems vs. Educational System Problems. A major classification of problems can be made depending upon whether a problem is a true educational problem (e.g. the fraction of our people who cannot read) or whether it is a problem related to the present educational system (teaching wage demands are contributing to the financial difficulties of the schools). Thus the entire financial crisis problem is a problem of the educational system. Obviously the two kinds of problems are initimately related. However, it may assist us in our thinking to keep the difference clearly in mind. If we focus on the system problems, we may neglect possibilities of change which would eliminate or vastly modify the system. (The "things will have to get worse before they get better" argument.)

For example, Illich and others believe that many of our educational problems are generated by the kinds of behavior required by the fibre and structure of the social system of the school. Specifically, several consultants have expressed the possibility that children's inability to read is generated by the social system into which the children are placed and it is not strictly a pedogogical problem at all. They would argue that any pedogogical or instructional approach which assumes a pupil-class-teacher relationship more or less as it is, is doomed to failure. On the other hand, a transformed set of realtionships would cause the reading problem to vanish without any advance in the methodology of teaching reading as it is commonly thought of.

Outline of Problems Analysis. If we accept that the chances of error are great, a detailed and logical problem analysis can provide a context for ideas and can make a public plan susceptible to scrutiny by a wide range of scholars, practitioners, and other interested people. Extensive scrutiny and debate can help to refine an analysis and reduce the probability of error. In this spirit the following outline is proposed for the anlaysis of educational problems.

I. Statement of Problems.

A. Educational Problems.

B. System Problems.

II. Symptoms of Problems. Evidence.

III. Analysis of Causes.

IV. Possible Programs.

V. Cost of Possible Programs.

VI. Relation between program and cause.

VII. Expected improvements to be anticipated.

VIII. Needed research and developments to facilitate progra

IX. Obstacles to programs

X. Ways that the program could fail.

A. Signs that the program is failing.

B. Corrective action to be taken.

XI. Questions to be answered.

XII. Staffing and schedule for program.

XIII. Key decisions to be made with schedule of timing of decisions. Who is responsible for each major decision.

This paper deals only with the statement of the problems, some discussion (incomplete) of symptoms and evidence and some questions which the problems raise.

Checks and cross checks. The human mind tends to focus on a few salient features or a limited number of items. To escape from this feature, the check list is used (e.g. list of camping items). In dealing with any program as complex as an educational program, checklists become very important. There are many taxonomies of education, the educational establishment, educational processes,

educational objectives, educationally related disciplines, etc. In addition, the documents prepared in the course of the planning effort will form a fairly comprehensive network of ideas and program elements. It is proposed that every part of the NIE plan be used as a checklist for every other part in order to anticipate ramifications, side effects, needed components of the plan, etc.

I. Educational Problems.

1. Reading. Reading and other verbal skills are basic and continuing problems in education. Much of the debate about education swirls around the definition and evaluation of reading competence, the appropriate methods of reading instruction. Black parents in the inner city demand that the highest priority be given to reading instruction. Illiteracy as determined by army entrance tests, by standardized school tests, by the national assessment project, and by other studies is a major concern, but there is an entire spectrum of concerns which would be the basis of legitimate efforts regardless of the extent of illiteracy.

Reading is the touchstone to a fexible learning environment. The student who can read becomes much freer to engage in independent study, problem oriented studies, use library resources, etc. The age and manner of learning to read can bias the future intellectual development of an individual. Failure to learn to read can relegate one to a life of poverty (Tussing, 1970), frustration, and inability to cope with the modern world.

> "Even conflicting and competing surveys make clear that there has been no large-scale pre-emption of one medium by another, that each is used for a different set of reasons.
> .....
> "His estimated receiving rate of bits (of information) per minute received by an urban person for the various media are: Reading - 1500, Films - 800, TV-400, Radio - 300, Lecture - 200, Observation of environment - 100, Misc. - 100.
>
> Thus, for every minute spent at information activities, reading is almost double the 'efficiency' of the nearest competitor, films, and 3½ times its most famous competitor, television.
> .....
> Print is neither dead or dying...the alphabet and document still (are left) indispensible to the efficient use of the eye and brain and to the demands of human rationality."
>
> -Ben H. Bagdikian in The Information Machines (Bagdikian, 1971).

Arguments such as the above can be extended. In order to be free, in order to function in a job and in society, reading is essential.

This importance of reading is supported by movements to make reading a priority program of the government. The right to read program has been supported by two successive commissioners of education. The reading problem emerged spontaneously as a prime candidate for the attention of the NIE at the product development meeting sponsored in Los Angeles by the planning unit. A group of outstanding psychologists convened by the planning unit recommended reading as a major focus of research and development in the coming years.

What are the dimensions of the reading program? Profiles of Children, a summary document prepared by the U.S. Government (see appendix p.) (U.S. Supt. of Doc., 1970) indicates that, depending upon age and place between 1 in four and one in seven children have trouble reading effectively. Another source (Bagdikian, 1971) states,

> "...If routine access to current printed material is added to personal illiteracy, the proportion of the American population that does not regularly absorb printed material is closer to 20%."

Evidence from a Harris survey to determine functional illiteracy (inability to fill out a routine form) and rejection rates for the army on the basis or illiteracy support the above figures. The reading problem is significantly worse among blacks than among the white majority.

If there is almost unanimous testimony and evidence that reading is a major educational problem, there is no consensus on the means of attacking the problem. In fact, some people do claim that reading is only a problem because it is so decreed and enforced by the dominant white culture. Others insist that reading would be learned more quickly and naturally at age 8 or nine if there were not pressure to read at age six. Other proposed solutions include more Sesame Street type programs, early reading readiness, early formal education, medical diagnosis and treatment, and early learning to learn programs.

It should be added that significant numbers of people of all ages have reading difficulties. A national reading program would encompass the full range of ages and educational aspirations. i.e. Many college students or would be college students cannot read effectively for advanced study.

Several questions are posed by the above.

1. To what extent is the requirement of reading an artifact of our expectations?

Mathematics. An advanced technological society which attempts to deal with the quality of life and ecological relationships must have a large number of citizens who can use the language and concepts of mathematics. As the side effects of technology (or even the dismantling of some aspect of technology) become more serious, more and more information must be processed using the techniques and skills of the mathematician. At the most everyday levels of decision making concepts of numbers and statistics are essential for functioning.

The international mathematics survey implies a relative deficit of achievement in mathematics in the United States relative to other developed countries such as Japan.

Carl Bereiter has indicated that according to his research and his criteria that schools in North America are able to teach computational skills but they are not able to teach arithmetic problem solving abiiity. i.e. Other things being equal students do not improve in arithmetic problem solving ability as a result of instruction. (Bereiter, 1969)

Arithmetic and mathematics are considered important by students parents and society in general. Yet in 1961 Martin Mayer wrote in his study of the schools,

> "In the elementary grades, mathematics education in American schools is catastrophically bad..."
>
> "On the secondary level...American schools have in fact, fallen well behind their European contemporaries..."

Martin Mayer quotes Edward Begle, David Page, and Max Beberman in support of his position. (May, 1961) Yet, in the years since Mayer's book was written the efforts to reform mathematics education have run into massive difficulties. (Newsweek, May 10, 1965, Shaw, 1969.)

It was suggested by Minsky and Pappert at the Berkeley meeting that in order to communicate and teach the esthetic and creative component of mathematics as well as the more conventional problem solving and computational skills, a new approach would be needed. We need to create a "Mathland" in which the skills of mathematical thinking give the student potency, a sense of mastery of his environment and the opportunity to create.

Clif Swartz of Stoney Brook has suggested that the ability for certain levels of mathematical conceptualization are something either one has or one does not have. However, William Johntz of U.C. has a program for teaching math concepts which seems to challenge this view.

Thus the following beginning list of questions might be generated about mathematics.

1. What is the relationship between various mathematical abilities and (the concept of a minimally well-educated person?)

2. What is the relationship between mathematical ability and various forms of competence--in work, in life as a citizen, in interpersonal and private activities?

3. What is the tolerable, optimum, or appropriate mixture of people a. who are highly sophisticated in math, b. who are competent in the basic concepts of math and statistics, c. who are competent in the skills for various technical and skill based jobs and d. who are competent in the statistical concepts and skills related to decision making?

4. What kinds of environments can we provide in order to maximize various kinds of arithmetic, mathematical, and statistical abilities?

5. How can we weave mathematics into the life of the student in order to increase the probability that he will use what he has learned in situations outside of the classroom?

6. What relationship must innovative programs have with the adult community in order to maximize what is possible and probable with children and teenagers?

7. What are the consequences of various curriculum decisions? e.g. What should be taught? What can be taught? What sequences should be used? What alternatives and options should be offered? When should decision poincs be faced? Who should decide?

Commitment to Learning. Loss of curiosity and eagerness to learn. In spite of endorsements of life-long learning, there is evidence that students become more and more displeased with school with each additional year of schooling. Furthermore, the overt dissatisfaction with schools in general and particular aspects of schooling has been increasing in recent years.

Popular thinking seems to be that the first effect is the result of the dehumanizing aspect of schooling (quality of eduation). i.e. Children come to school with natural curiosity and school gradually kills their natural love of learning. The second effect is attributed to greater awareness of the childish, arbitrary and "irrelevant" aspects of the school establishment.

Alternative views are possible and should be examined in the light of psychological and sociological knowledge. Both effects may be an intrinsic effect of maturation and increasing competence (i.e. the old dog new tricks effect). In any case the problem is sufficiently serious that the following questions should be examined.

1. What kinds of environments and interactions will generate persistence and attention to learning new skills in entirely new areas?

2. What are the advantages and disadvantages of extension of learning in the direction of previously learned skills and interests (specialization) and the acquisition of entirely new skills and knowledge across a broad range of disciplines (becoming a generalist)? The analysis should examine not only costs and benefits but also the possibility of inhibitory effects.

3. What are the patterns which correlate with increasing rejection of formal instruction and which patterns correlate with persistence in formal instruction in both the specialist and generalist types? (e.g. patterns of experience patterns of personality, etc.)

Motivation. Large differences in acheivement can be obtained with a change in the motivational state of the learner--other things being equal.

The following table shows interesting patterns (OE 38000 EQUALITY OF EDUCATIONAL OPPORTUNITY. p. 23) of response to questions related to motivation among different minority groups of 12th grade students.

Behavior modification techniques have also been employed to increase responsiveness and attention to learning tasks. While some significant results have been reported, there are a host of unanswered questions and concerns. In particular the long term consequences and implications of manipulative reward systems on the student's image of the world is the basis of many objections.

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Table 10.—Percent of twelfth-grade pupils having certain attitudes and aspirations

Item	Whole Nation						Nonmetropolitan						Metropolitan									
	M-A	PR	I-A	O-A	Neg	Maj	North and West		South		Southwest		Northeast		Midwest		South		Southwest		West	
							Neg	Maj	Neg	Maj	Neg	Maj	Neg	Maj	Neg	Maj	Neg	Maj	Neg	Maj	Neg	Maj
Do anything to stay in school	37	35	36	44	46	45	43	44	49	50	46	50	47	47	44	43	48	54	50	47	35	44
Desires to be best in class	33	36	38	46	58	33	48	35	69	46	68	48	48	36	48	33	63	45	70	45	56	35
3 or more hours per day study outside of school	22	21	17	42	31	53	26	21	32	23	36	23	33	27	27	19	33	27	33	22	27	23
No willful absence	59	58	69	76	76	66	72	65	84	75	86	72	68	61	73	66	78	69	77	69	64	56
Read at least 1 book last summer	69	72	73	74	80	75	76	74	83	73	82	75	81	79	75	74	83	73	80	72	76	75
Desires to finish college	43	43	42	46	46	45	43	38	42	41	51	47	43	49	46	47	52	52	57	45	42	51
Definitely planning to attend college next year	26	26	27	53	34	40	22	35	30	35	41	50	31	46	33	37	35	41	43	40	18	55
Have read a college catalog	46	45	50	70	54	61	51	57	49	50	54	64	59	73	55	59	57	67	59	63	54	65
Have consulted college officials	22	25	26	33	25	37	26	33	22	38	23	38	32	46	25	35	24	44	26	30	25	30
Believes self to be brighter than average	31	37	31	51	40	40	41	48	42	45	44	51	37	48	36	50	40	48	46	51	43	56
"I just can't learn"	38	37	44	33	27	30	31	39	24	37	21	35	29	39	34	40	25	37	25	39	28	38
"I would do better if teacher didn't go so fast"	28	31	26	26	21	24	23	23	22	25	19	24	22	22	22	24	20	24	19	25	20	25
"Luck more important than work"	11	19	11	8	11	4	14	4	15	4	14	4	9	4	9	4	10	4	11	4	10	4
"When I try, something or somebody stops me"	23	30	27	18	22	14	24	14	22	16	26	14	21	13	23	15	19	14	23	13	21	12
"People like me don't have much of a chance"	12	19	14	9	12	6	15	6	11	6	11	5	12	5	13	6	10	6	11	4	13	6
Expect professional career	18	21	21	43	27	37	26	34	25	31	26	38	31	46	31	37	27	37	28	37	22	38

of the data gathered in the survey so that research workers will have easy access to them.

Opportunity in Institutions of Higher Education

The largely segregated system of higher education in the South has made comparison between colleges attended mainly by Negro students and mainly by majority students easy in that region. Elsewhere it has not been possible in the past to make comparison between educational opportunities because of the general policy in Federal and State agencies of not collecting data on race. In the fall of 1965, however, the Office of Education reversed this policy as a result of the interest of many agencies and organizations in the progress of minority pupils in gaining access to higher education. The racial composition of freshmen of all degree-seeking students was obtained from nearly all of the colleges and universities in the Nation.

These racial compositions have been cross-tabulated against a variety of characteristics of the institutions in the report itself. Here we present only three such cross-tabulations which relate particularly to the overall quality of the institutions. First, there are presented three tables (11, 12, 13), showing the distribution of Negro students in number and by percentages over eight regions of the Nation. Over half of all Negro college students attend the largely segregated institutions in the South and Southwest. About 4.6 percent of all college students are Negro.

Following the three distribution tables are three cross-tabulations showing, respectively: student-faculty ratio, percent of faculty with earned doctorate, and average faculty salary. Looking at table 14, the upper column headings classify the institution by percent of Negro students in the total enrollment; for each of these the next column headings show the number of such institutions in the category at the left of the table and the average number of students per faculty member; the average is weighted (abbreviated in table head "Wtd. avg.") by the number of students in an institution, so that large colleges have large influence on the average. For example, the numbers 8 and 22 in the top line of the 0 percent column mean that there were 8 institutions in the North Atlantic region with no Negro students, and that there were on the average 22 students per faculty member in these 8 institutions. The bottom line shows that whereas the bulk of the institutions (1104 in the 0–2 percent column) have on the average 20 students per faculty member, those with predominantly Negro enrollment (the 96 in the 50–100 percent column) have on the average 16 students per faculty member. Table 15 provides the same categories of information on the percent of faculty with Ph. D. degree. Negro students are proportionally in colleges with lower proportions of Ph. D. faculty (bottom line of table 15) this is generally but not always true in the various regions.

Table 16 shows the average annual salary in dollars for faculty members in the same format as before. Negro students are in colleges with substantially lower faculty salaries. The institutions in the South and Southwest generally pay lower salaries than those in other regions, and the colleges serving primarily the Negro students are at the bottom of this low scale.

Other findings of the study are that--(1) in every region Negro students are more likely to enter the State College system than the State University system, and further they are a smaller proportion of the student body of universities than any other category of public institutions of higher education, (2) Negro students are more frequently found in institutions which have a high dropout rate, (3) they attend mainly institutions with low tuition cost, (4) they tend to major in engineering, agriculture, education, social work, social science, and nursing.

Future teachers

Since a number of investigations of teacher qualification in the past few years have indicated that teachers of Negro children are less qualified than those who teach primarily majority children, this survey investigated whether there might be some promise that the situation may be changed by college students now preparing to become teachers. To this end, questionnaire and achievement test data were secured from about 17,000 college freshmen and 5,500 college seniors in 32 teacher training colleges in 18 States that in 1960 included over 90 percent of the Nation's Negro population. Some of the findings of this survey are:

1. At both the freshman and senior levels, future teachers are very similar to students in their

Motivation is related to the problem of continuing eagerness for both specialized and general learning. (See commitment to learning). Thus part of the problem seems to lie in the changes which have occured in society so that students are not motivated to pursue non-relevant subjects. Relevance seems here to arise from a combination of interest and immediate applicability.

Once the field of affective traits is opened up we should also consider other related characteristics such as persistence, interest, curiosity, attention, frustration level, response to challenge, etc. which describe the way that individuals interact with their environment in general and with learning experiences in particular.

Some questions related to motivation are the following:

1. How does the range of experience (from affluence and pleasure to deprivation and punishment) in naturalistic situations affect the motivation of the learner?

2. Does the virtual elimination of overt punishment (physical and/or psychic) merely shift the baseline of what is perceived as punishment to relative absence of reward, success, and/or praise?

3. Does interest and curiosity saturate in the open classroom?

4. How does group activity act as an intrinsic reward and/or motivational device?

5. Are there cycles of experience (e.g. structured, unstructured, group, individual, harsh, benign, diagnostic, paced, games, formal, etc.) which maximize motivation and the intensity of the learning experience?

6. Are there mixtures of long and short term vistas, hopes or projections which maximize the normal motivation of individuals?

Many of the affective terms are not well defined in the conceptual or scientific sense. A further question then is:

7. Are there physiologic correlates of emotional states which can help us to define the affective terms more precisely and yet with sufficient relation to conventional meaning so that practical conclusions can be drawn?

8. To what extent does the learner's level of awareness of a motivational manipulation interact with the potency of the manipulation?

Response and appropriateness of curriculum. The question of the knowledge and abilities most worth having raises particularly difficult problems in times of rapid change. Old disciplines lose their legitimacy and we often have difficulty legitimating that which is new. We need to guard against faddism, rationalization of easy alternatives, and unproved claims of experts. That which is tried and true can be preserved or discarded for the wrong reasons while reason has not yet been refined sufficiently to completely replace intuition, experience, and wisdom. Experience still seeks to bridge the gap between what the learner wants and what the learner needs. Most students will confess that their immediate interests and desires are not necessarily in their long range best interests, that a knowledgable teacher and advisor has a responsibility to involve a student with knowledge which he may not perceive as useful. In this case the trustworthiness and credibility is critical to the authority of the teacher. However the old authority of the educated and experienced person has been severely strained by the widespread awareness of the failures, pretensions, and arrogance of the older generation in general and the university faculties in particular. The evidence for the above arguments lies in the relatively recent wave of student challenge of established school authority as well as parental authority. (Johnson, Washington Post, June 6, 1971, Harris, 1969. Byler, 1969.)

The issue of the curriculum does not die at the subject level. Even within subjects there is change and a variety of competing ideas so that the very diversity of available curricular materials generates a problem of evaluation, and selection.

The curriculum problem is also related to the problem of perceived relevance and motivation. The interrelationships among these problems would be another important part of the problem analysis.

1. What, if any, subjects should be required of all students? What objectives should be mastered by all students (if any)?

2. How shall change and renewal be brought to the curriculum? Should individual curriculum projects and commercial interests set the pace and cycle of renewal and revision or should there be an ongoing body with responsibility of injecting new knowledge and perspective into education?

3. What mixture of consensus, authority, pluralism, and diversity should be represented in the options, alternatives, and choices available to students, teachers, and parents?

4. What role in curriculum decision making should be played by scholars, teachers, government agencies, and other organizations?

5. How do commercial, certification, and gatekeeper functions (e.g. What sells well, who gets degrees and licensed, who gets admitted to college?) affect the curriculum and what changes should be made in the relationship between those functions and the control which they exert on the curriculum?

6. How can we negotiate between parties so that students are protected from rationalizing that everything which is unpleasant or difficult is "irrelevant"?

Relevance may otherwise come to frequently mean things which are immediately interesting or perceived as immediately useful. Activities which require persistence or which have intervals of necessary or unavoidable boredom can be labeled as irrelevant.

Dealing with Change. The fact of rapid change in society relates to all the other problems discussed. Many things that some call bad today (e.g. forcing adult decisions upon children) were accepted as good by most people only a few years ago. The dilemma runs something like this:

Almost every aspect of education must be <u>subject</u> to change in response to new developments, new aspects of society. Yet when we move to change some formal organized system within the larger society, the lack of knowledge often creates further and greater problems than we started with. (e.g. The side effects of pollution, inequitable welfare systems, the disaster of a limited war, etc.) Von Neuman described the problem thus: Technology and knowledge create change and the possibility of change. However, because technology can create large and unanticipated side effects, technology and knowledge also create the danger of instability in the system. (Von Neuman, 1956.)

We can remake the world to create our own future only if we have the important variables under control. It is doubtful that we can do this with traditional wisdom and managerial procedures since the evidence is (Tofler, 1970; What we must do Platt 1969) that traditional wisdom and decision making systems did not prepare us for the present state of affairs. Therefore, it would seem that an educational system must be invented which enables people to learn effectively under conditions of rapid change and which teaches people to cope with rapid change. /Note: It seems clear that the problem of dealing with change is both a system problem and a problem in the education of the individual./

The following questions arise from such considerations.

1. What kind of authority system can replace the systems which are either being challenged or which have been broken down?

2. What fraction of time and resources must be allocated to the process of continuing change in the curriculum, the methods of teaching, the use and evaluation of technology, the social and decision making structure of the school, etc.?

3. How can we control the instability inherent to rapid change?

Two brief comments may be appropriate here. A useful analogy is that of a feedback control system. The control system senses change and makes adjustments to the change so that something is controlled at a desirable level. If the response of the system is too sluggish the system never arrives at the desirable level of control. If the system responds too rapidly, the system tends to overshoot the desirable control level and the system oscillates.

In order to respond with appropriate speed the system needs accurate and valid information, a good information processing system, and a good mechanism for responding to the information. Agreeing that such a model and analogy is limited in the extent to which it can portray the true complexity of the educational system, one can describe instances which imply that each of the three analagous components of our education system is defective.

4. How can we draw the line between what is best for society as a whole and the needs of each student? This question arises because the condition of rapid change is both a system problem and a problem of the education of each individual, i.e. We need to create educational systems which do not become obsolete because of rapid change and the individual needs an education which enables him to deal with rapid change.

The problem of dealing with change is both a problem for education itself and a problem for the educational system.

Assessment, testing and evaluation. There is little unambiguous evidence regarding either the performance of individuals or the characteristics of groups. American students are either incompetent in mathematics or they are being asked to learn skills which have no utility. Students from black ghettos either do not have the language skills in order to learn effectively or they are being victimized simply because they have a different language which does not happen to be the one used by the dominate white culture.

Multiple choice "objective" tests are criticized because of their normative bias (Glaser, 1968) and because they do not allow for the perspective of the person taking the test (Hoffman, 1964). Many formal tests, especially pencil and paper tests, are criticized because they cannot test the true objectives of education or because the learner cannot exhibit what he truly knows in that format.

Tests and testing programs interact with one's self-image (Brim, 1969), the teacher's and parent's image of the learner. These images of the learner must necessarily interact with many educational decisions.

The time required to develop an adequate profile and to keep that profile up-to-date can be great and costly. Naturalistic tests and observations, performance tests with actual objects (e.g. actually type a message, machine a metal object to a certain tolerance, etc.), and projective tests all require adult observation and would seem to drive the cost of testing to above presently acceptable levels.

Possible solutions include making use of sampling procedures, criterion reference tests, developing various ways in which the learner can challenge and modify the testing system used on him, more effective cycles of testing and re-allocating the use of resources to make testing and assessment of individuals more central to the learning process.

Also to be examined are the people who can and should have access to test and assessment information, when the information should be available, and how the information should be presented.

Further questions:

1. To what extent can unobtrusive measures of student activity and student output contribute to testing and assessment? (see Unobtrusive Measures by Campbell et al.)

2. To what extent can testing be a way for the student to do his own reality-testing of the relationship between his abilities and characteristics and the world?

3. To what extent does testing merely confirm an individual's relationship to the social heirarchy around him (see "Student as controller of his own learning." comments by Joan Bissell.)

Testing and the larger system. Testing results are used to form judgments and make system wide decisions. Either massed data (e.g. reading source from an entire city) or sample data (e.g. National Assessment) are used. Once again the entire range of statistical questions is opened up. In what ways are the tests invalid or inaccurate? To answer this question often requires an item by item scrutiny by very well educated individuals. (e.g. Comments on science by Dr. Elizabeth Wood, 1970.) In what ways do the tests tend to define what will be taught rather than merely assess what has been learned? What inferences and decisions can legitimately be made from statistical results of tests and what evidence is there that such decisions result in improvement rather than merely something different? To what extent do testing programs (if they are of sufficient scale to do any good) take away needed resources from the teaching and learning function of schools? This in turn raises the general question of scale. How massive must a testing and assessment program be in order to do the job we expect? Is there a chance that the present programs are orders of magnitude too small?

Evaluation implies a determination of how good or bad a program is. In the words of Dr. Atkin, the evaluation focuses on a unique event and comes to a decision about its worth. Dr. Scriven, who is working on an evaluation plan for the NIE, has focused attention on the distinction between in-process evaluation which serves to provide feedback information to improve the final result or product and summary evaluation which draws a major conclusion after a program has had enough time to show how good it is.

At the present time the field of evaluation is in a state of growth and change. The relationship of evaluation to values, self-interest, and power make the problem of evaluation an extremely difficult one to reduce to comfortable terms. (e.g. A recent panel of consultants raised the question, "Who evaluates the evaluators?") An honest evaluation policy raises questions of spying on workers, the negative effects of being evaluated, self-interest, conflict of interest, and challenge to established authority. Nevertheless, unless we can evaluate we can never find out if the emperor has any clothes on.

Physical Violence, Disruption. This may include the following: Overt hatred, passivity and withdrawal, possible adverse consequences of attempts to control violence. Disruption has reached a level that in some sense can be measured by meetings and publications held to discuss the phenomenon. (Disruption in Urban Public Schools by S. Bailey.) (Buder, 1971) Whether the evidence is sufficient to consider violence and the probability of violence a major problem depends upon one's interpretation of the events. Apparently many middle class families are leaving the inner cities to flee the threat of violence. Media attention to lurid crimes may make a real problem out of a set of

symptoms; however, if enough people believe that violence is a problem, then the fear of violence becomes a major problem.

Even if violence is not a major problem for most schools at the present time, it is a potential problem. We should be alert to their symptoms and use the information in order to diagnose the causes and for clues to treatments of the underlying causes.

If we do accept violence and disruption as a problem, we can ask the following questions: (Note: I used Bob Davis' list (RBD, Internal Note #2) of problems for this and a few other problems. (However, the responsibility for the wording is mine.)

1. How much of violent and disruptive behavior is physiological (e.g. due to improper blood sugar level, brain damage or brain tumors, double-y chromosomes, etc.)?

2. Is violence the result of the dominant culture being rejected by the sub-culture?

3. What is the interaction between TV and school violence and school violence and disruption?

4. Does the school breed violence by the way it treats children (e.g. destruction of initiative, self-confidence, curiosity, resourcefulness, persistence). Does the school fail to prevent a tendency toward violence when it fails to develop self-respect and respect for others, when it fails to develop love for oneself and others, when it fails to develop self-reliance? Are there hidden messages in what the school teaches by example which promote violence?

5. How much school violence comes from the machismo mystique which accepts the model of doing battle with the community or establishment? How many students involved in violence have parents (especially fathers) who are involved in community battles?

6. Does violence increase as the deprived become increasingly aware of discrepancies among different elements of society?

7. Is violence more acceptable to certain groups than to others? If so, which groups have a low threshold for violence and what triggers violence?

8. Does the government and other established authority breed violence by hidden messages and by official acts of violence such as capital punishment, war, etc? i.e. Is there a double standard for violence in the eyes of many citizens?

9. How can we deal with the position that violence is justifiable and legitimate under certain circumstances to right an injustice and to deal with an unresponsive power structure? (e.g. The American Revolution?)

Coping Skills. Contact with the "real thing." Process. Students do not typically learn the complex of coping skills which help one to function in the beaurocratic, legal and structured networks of society. (e.g. How to apply for a job, how to plan personal finances, how to cope with authorities, how to schedule time, how to deal with repair problems, how to cope with medical emergencies, how to start a small business, etc.) (Note: Joan Bissell has a list of such "real life curriculum items". Also, in the book, "Teach us what we want to know." (Byler et al) there is evidence that children would find relevance in learning coping skills.

"Schools rarely teach the real thing. Instead they teach "something else" (Bruner's phrase) e.g. Tenth grade geometry may consist of memorizing proofs of a few theorems. This isn't real mathematics. Junior high science may consist of memorizing vocabulary lists. This isn t real science." (Robert Davis in Internal Note #2, March 30, 1971.)

Schools without walls and schools which bring the professionals, craftsmen and workers into the school to work with children, offer approaches to teaching the coping skills, and bringing students into contact with the real thing. Project and problem teaching in which students engage in realistic efforts to do things, to change things in the community, to build things, to sell things also can promote the coping skills.

Problems lie in the relationship between coping skills and the underlying academic skills. How do the priorities get asserted? Integration of coping skills, process skills, and experiences which deliver the essence of a subject can be attempted, but the results are unclear. Integration of these factors raises the problem for the student of dealing with a confusing range of variables. Separation into simpler - less realistic - segments is often done so that the student does not have to deal simultaneously with too great a number of new elements.

Questions arising from the problem of teaching coping skills, process skills, and contact with the "real thing."

1. Can a curriculum which attempts to teach these more subtle and difficult aspects of education be efficient and also deal adequately with the basic academic subjects?

2. Can schools develop a methodology to teach coping and process skills with a reasonable probability of success?

3. How much time should be devoted to teaching the coping and process skills? What cycle, frequency, of teaching should be employed?

4. To what extent would and should acquisition of coping skills be the individual responsibility of students and an outgrowth of the academic curriculum?

5. To what extent should contact with "the real thing" be an opportunity within schools rather than a uniform teaching responsibility? (e.g. Opportunity to spend a day or so with a scientist in his laboratory, opportunity to go to scientific meetings, etc.)

6. How can teaching of coping skills, process skills, and opportunities for contact with genuineness be used to increase motivation, a sense of relevance.

7. What is the longitudinal outcome of current attempts to implement process curricula? (e.g. AAAS - Science, A Process Approach.) To what extent do these curricula fairly represent the process ideal?

8. To what extent can new learning environments using games, simulations, and challenging problems maximize process learning?

9. Can schools develop a sense of various "realitites" (RBD Note #2- See this note for the following questions as well.) e.g. California as a real place; injuries as real possibilities; crime as a real event with real consequences; businesses and buying stock as real.

Can we give the student these realities as possibly related to himself and within his spere of decision making.

10. Can schools find ways to provide adequate career models so that, for example, a student can envision himself as being a lawyer? This would require contributions from individuals who study, analyze and have some understanding of adult role models, "ego ideals", culture values, "modeling theory" in social psychology, social facilitation theory, etc.

11. Can schools find ways to develop self-reliance, realistic personal goals, self-confidence, resourcefulness, persistence, creativity, etc.

12. How can we prevent courses designed to teach coping skills from degenerating into travesties of the original idea? (Many "general business courses" are supposed to teach practical skills, but the material and the manner of teaching often make the case worse than the disease.)

II. System Problems

The Failure of organizations. (Schools, school sytems, State Departments of Education, colleges, etc.). The network of political and social structures within organizations is resistant to modification. The formal and informal decision making processes within educational organizations are resistant to rational and humane change. (Argyris, 1958) They are not self-renewing, adaptable, responsive to children, students, parents, minorities or even the will of the majority. They have difficulty managing and utilizing the resources at their disposal. They are not "good for the growth of the human beings who work within them or for when they provide services." (Robert Davis, Note #2) Evidence of difficulty in the work situation for teachers comes, in part, from unionization trends and teacher strikes.

The Community School Project in the Adams-Morgan area of Washington, D.C. returned to a fairly traditional format after seemingly heroic efforts to create new relationships and new forms of decision making and change. The system was resistant to change and restoring forces returned to an equilibrium state much like the one which generated the movement for change.

Studies have shown that a new teacher going into an established school with ideas of change is "shaped up" within 6 to 8 months at the most and within that time gives up her ideas of change.

Innovation suffers from "the great man" syndrome. An innovation survives as long as a strong charismatic leader provides the driving force. (e.g. Winnetka, Illinois under Washburn and Marland.)

Possible interpretations of the situation follow:

The nature of the constraints--political, social, value laden, rooted in the general upheaval of society--are not well understood. Therefore, when we install change, we neglect to adjust or take care of many of the elements in the network which have been disturbed by the installation. Without suitable adjustment the natural responses of most of the elements begin to work against the intruding innovation. (An obvious analogy is that of the bodies response to an intruding virus or bacteria.) Eventually the organization "heals" itself and rejects the innovation.

Organizational theory is not even as well understood as education. It is at a higher level of disciplinary complexity--yet the organizational system interacts strongly with the education which students receive. Our organizational form is borrowed from the varieties of organizational forms in society at large. Attempts to advance, attain and hold status, affect decisions according to conscious and unconscious mechanisms are taken from the larger society. Yet schools--in order to accomplish their mission--may need a new, as yet uninvented organizational and decision-making structure.

Scale is one aspect of our organizations which seems to be causing us trouble and which is within our power to change. There may be an organizational size beyond which responsiveness cannot be sustained. Several movements to decentralize authority and responsibility are taking place and they should be closely watched.

Teachers are individuals who, according to surveys, liked school when they went through the system. Therefore they may be a conservative force and want to retain that aspect of teaching which led them into the profession. Innovative systems disturb the teacher's role and we usually offer nothing valuable in human terms to make up for the loss. Therefore most (or enough at any rate) teachers may overtly or covertly resist the change. (According to this explanation.)

Surveys of the change process in schools show that changes imposed from above are resented, less likely to be implemented and less likely to be sustained when the initiating administrator leaves or removes his attention. Yet change from below often causes administrators to feel threatened and the innovation dies from lack of administrative support.

Since the results of change are so long in becoming evident, there is no adequate feedback system to indicate that a change will produce really beneficial results. Therefore individuals tend to fall back to a steady state of activity unless constant pressure of an innovative leader is exerted on them.

The adults of the community may not be in tune with the change and they are rarely brought into consensus with the change. Therefore, the adults of the community respond negatively to observable effects of the innovation (kids on the street during school hours, necking on the school lawn, etc.). Sooner or later they express their opposition in school board and bond elections and the system returns to a more stable pattern. (e.g. School systems around Minneapolis.)

These interpretations give rise then to the following questions:

1. Can we change the social and organizational structure of schools independently of changes in society at large?

2. Can we negotiate new roles for teachers which offer some new satisfactions which are at least equal to those which must be given up in restructured roles?

3. Can we discover short term outcomes which are reliable and accurate indicators of future long-term results?

4. Can we find ways to interact and negotiate with the adult community before and while changes are being instituted so that a dangerous chasm is avoided?

The Quality of Teachers and Teaching. Many observers describe teaching as bad. Silberman (1970) (Crisis Silberman not NCERD one) speaks of the joylessness and mindlessness of the American public classroom. Koerner has written a book on the Mis-education of American Teachers. Large, well-publicized efforts (para-professional movement, team teaching) have attempted to reshape the role of the teacher. Consider the following aspects of teaching and teachers:

Graduates of Education courses are at the low end of almost any currently available measure of academic aptitude, intelligence or achievement. Therefore they may be unlikely to pursue subtle nuances of new approaches to teaching.

As mentioned above, teachers as a class liked the schools that they went through. Therefore, they may see nothing wrong with the scene which others criticize so severely.

Teachers' taste in intellectual matters tends to be very much on the order of the Reader's digest (Marcus, 1970). Therefore they are unlikely to pursue and acquire (as a class) the knowledge which should be introduced into the lives of children.

According to the observations of Phillip Morrison, teachers are left-handed people. They are more interested in relationships among people and affect than in abstract and highly structured knowledge. They are, therefore, less likely to take a hard disciplined approach to their profession unless the standards are enforced in a fairly demanding way.

College teaching in particular needs attention and reform. There is a fair amount of observational evidence and expert testimony that the specialized subject knowledge of the college instructor does not ensure adequate teaching. In fact, it is charged that the research oriented training in graduate schools results in a contemptuous attitude toward teaching. The Doctor of Arts program is designed to make a positive contribution to the art and discipline of college instruction. College instruction couples into public education directly through programs of teacher preparation and certification. Any general solution to an educational problem should include the coupling between college and society as well as the coupling between college and pre-college education. This is especially true now that such a large percentage of students will in the future receive post-secondary education.

Teaching can be improved by a. improved selection, b. improved training and education, c. improved conditions for creative work on the job, and d. improved continuing in-service education. If we accept the charge that teaching is in a bad way as a profession then each of the above approaches to improvement has severe difficulties.

Improved selection may be the most rapid method of improvement. The turnover rate for teachers has been fairly high (Half the teachers teaching at any time will be no longer teaching with about ten years. (Statistical Abstract, 1964) This in itself would seem to be an indictment of the work, but it also offers opportunity. The difficulties in this approach are the following:

a. The image of teaching is still not good.

b. The credentialing process is repellant to many qualified people.

c. The new teacher must work in a social and political system which tends to make him behave like the other teachers in the system. Thus he either shapes up or leaves the profession.

The other methods of improvement have what I call "pipeline problems. Before any improvement can be felt on a large scale severe hurdules must be taken in sequence. For example:

1. A new system or idea must be understood by those who affect the teachers of teachers. The idea must be accepted and new roles, courses, and credentialing procedures must be approved. The time for the diffusion and acceptance of any significant new idea would be of the order of five to ten years at the least.

2. It would take at least four or five years for the first students to pass through the system and begin to enter the schools. (Probably true even for the inservice idea.)

3. It would take at least five years before teachers represented enough of the community of teachers to have any significant impact upon the lives of children. The minimum total time then is of the order of 15 to 20 years at the least. Twenty years is a long time. A new idea may be an anachronism within twenty years. To keep an idea living, flexible and adaptive during its twenty year passage into widespread use is indeed a difficult constraint upon the initial conception and design.

Of course, some solutions can be applied in parallel. The point of the pipeline argument is that any teacher solution will require other approaches to both support the teacher system during a period of transition and to remove the load on a system so over-loaded that additional pressure probably results in poorer performance. A Sesame Street for older students would have some of the characteristics of such a support system. Improved design of the school space and resources as well as new organizational designs would also be in the right direction.

One suggestion is that groups of teachers who meet criteria for a certain kind of instruction be grouped together in a school in order to provide a critical mass of like minded individuals. This might prevent the dissipation of talent and the loss of motivation of enthusiasm when an innovative teacher is isolated and unsupported.

In view of the difficulty of making rapid massive improvements in the quality of teacher education and teacher personnel, several possibilities should be explored which can interact with and support the teaching system.

The questions which arise from this serious problem:

1. To what extent can non-school alternatives (e.g. Private enterprise efforts such as BRL,s experiment in Gary, Ind., or extensive use of home based educational systems) move quickly to provide significant alternatives to the usual public school?

2. To what extent can new forms of school orientation and organization (e.g. free schools, open schools, voucher schools) create subsets of the school system which approximate the needs and/or desires of a certain percentage of students and parents?

3. To what extent can individuals within the community become involved with the education of children to moderate and give greater variety to the eduational process so that there is less dependence on the intellectual and personality characteristics of the cadre of teachers?

4. To what extent can the entire system be restructured to allow significant change in the approaches taken by individual teachers without the entire system's feeling threatened? i.e., Can an emerging theory of organizations be applied to schools?

5. Can modifications be made in the legal relationship between children and schools to relieve some of the strains in the system (e.g. skyrocketing absentee rates in high schools)?

6. Can new forms of negotiation among teachers, pupils, and society, and parents allow some creative accommodations to be made in a society in which the trend is that most parents will be at least as well educated as the teachers?

The Rights of Children (Students). A relatively recent problem (arising along with concern for the effects of the milieu of the school on the self-image and attitude of the student) is the concern for the rights of students and the legal rights of minors. Most of us went to school when the teacher and principal's word was the unchallenged law except in very rare cases. Suddenly we have begun to consider the effects of previously unexamined impositions upon the rights and lives of children. (Student as Nigger, Saturday Review, July 17, 1971, page 42, and other materials by Holt and others.) Extending the concept of freedom and individual rights down to the elementary grades has created both new voices in a creative discussion of schools (e.g. underground newspapers, legal cases) and new problems for the teachers, parents and the community.

Under such probing what happens to the concept of a required curriculum? Can children choose not to learn to read? Schools were always subject to the fact that a child can refuse to learn by a variety of mechanisms (you can lead a horse to water, etc.), but now we are facing the challenge of whether it is proper to ask the child even to participate in the formal setting if he chooses not to.

What happens to the schools' and the adults' responsibilities to safeguard children and prepare them for adulthood if the concept of the rights of children is sufficiently broadly interpreted?

Research and Development Model. This country spends, compared to other nations, huge amounts of money on educational research and development. To many observers it is not evident that we have got an adequate return for our money, (OPPE, 1971.) This raises the following questions:

1. Do we need to (and how can we) raise the quality of research and development personnel? Can we improve the selection process to insure that more qualified individuals will engage in the work which needs to be done and that the voices of more qualified individuals will be given proper weight?

2. Can we improve the training of research and development personnel considering the state of change and flux in the field of educational research and development?

3. Can we (and do we need to) create a better model appropriate for a pre-scientific field such as education? Is there too much reliance on the hard laboratory sciences as a source of insight into research and development procedures?

4. Can we do research and development on the process of dissemination and implementation in order to bootstrap ourselves up to the level of effect and competence in dealing with problems which is needed? (Hively, 1971).

Indicators and Statistics. The problem of analysis is made difficult partly because the world is too much with us. Things we take for granted and do not examine closely may be time bombs which we will appreciate in retrospect only after they have exploded. In education, some of the invisible or relatively unexamined things we do may be sending out signals which drown out all the deliberate and planned messages. For example, a classroom system which requires extreme sensitivity to the whims of the teacher may render incredible any attempt to say that the purpose of the school is to teach independence and creativity.

To remove such observations from the purely anecdotal, to prevent from fixating upon the dramatic example which may not represent the true overall picture, reliable statistics which illuminate the situation are needed. What statistics from the silent generation of college students during the 1945-1955 decade could have warned us of the turnoil in store for college administrators of the late 1960's.

The search for useful and dramatic statistics is difficult. Furthermore, there are pitfalls. A trend may be a fad which will shortly disappear and be forgotten or it may portend the most serious up-heaval. Statistics must be interpreted. When we read of the statistics regarding women in the professions and in positions of responsibility and authority, those statistics must be interpreted. Interpretations will differ. Nevertheless, constantly pressing for new evidence which can both challenge and help us to resolve our disputes seems to be the way of virtue.

Example of statistics which might be useful in analysis:

Characteristics and attainments of children in foster homes.

Incidence of stress diseases in different jobs.

Changes in suicide rates and suicide rates among different groups.

Characteristics and number of people who choose to leave the country.

Interaction between television programs and reading patterns.

Observations on spontaneous intellectual and learning activity in unusual situations (e.g. jail, all male, all female, hospital, mental institutions, Alaska va. Florida, etc.)

Income differentials between parents and children.

Information dissected in various ways and normalized to show fraction of total income.

For example, the statistics on death rate, health, and mental illness as a function of socioeconomic class are particularly interesting for any interpretation of the educational problem.

Possible additional useful evidence:

Growth and development of children over summer vacations.

Effects of learning a second language.

Intellectual and learning attainments of people with various handicaps incurred at various ages.

Characteristics of voter vs. non-voter.

Characteristics of voter in local elections vs. non-voter.

Characteristics of those who write a. to editor of local newspaper, b. to congressman, c. to state legislator.

Characteristics of those who complain to smallest local government unit.

Taste (spontaneous) patterns of various groups in books, films, newspapers, with some effort to find instances uncontaminated by knowledge of status conferred by a particular choice. Also evidence of acquisition vs. actual reading and assimilation would be useful.

Characteristics of people who have responded to a particular work.

Characteristics of those who respond to a particular opportunity.

Particularly important are trends, changes in trends, or evidence which counters conventional wisdom. For example, doctors and medical students have extremely high rates of drug use. This runs counter to the belief that education and knowledge of effects will reduce the probability of drug usuage. Of course, a countervailing reason for the use may be the extreme availability of drugs to doctors. However, the statistics are still intriguing in defining the limits of education.

Also particularly important for the planning of educational change are sudden shifts in governance rules. New sources of power and decision making place new constraints on decision making. Often changes in governance (e.g. including students and faculty on the board of trustees) are the result of significant changes in the way a significant fraction of the people view the world.

Conclusion. The hasty overview which has been presented cannot adequately deal with the complexity and scope of education. The volume of this report could easily be expanded by including quotations and statistics from the supporting data. None of the information leads to unequivocal conclusions. This overview,

then, should only stimulate interested individuals to immerse themselves more deeply into the search for evidence and the refinement of interpretations and plans based upon the evidence. Criticism of this report which could be the basis of a more tightly written document would be greatly appreciated.

Appendix of Numbers and Statistics. There are a variety of informative and intriguing background statistics which do not appear to be directly referenceable in the listing of problems. These are included here:

BEST COPY AVAILABLE

Teachers	
Elementary School Teachers	
Public	[illegible]
Nonpublic	[illegible]
Secondary School Teachers	
Public	[illegible]
Nonpublic	[illegible]
College and University Teachers	
Public	233,000
Nonpublic	[illegible]
Total	2,275,000

Administrators and Supervisors	
Superintendents of Schools	13,106
Principals and Supervisors	119,365
College and University Presidents	2,483
Other College Administrative and Service Staff	82,000
Total	216,954

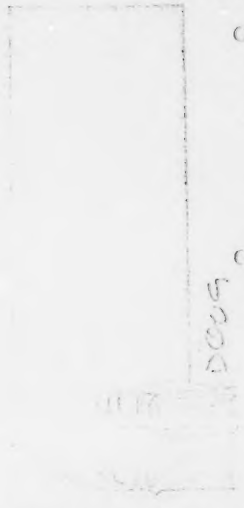
[illegible]	88,336
[illegible]	31,203
[illegible] and Junior Colleges	2,483
Total	122,242

School Districts	20,440

Board Members	
Local School Board Members	106,806
State Board Members	500
College and University Trustees	25,000
Total	132,306

Students

Pupils in Elementary Schools (Kindergarten through eighth grade)	
Public Schools	32,600,000
Nonpublic (Private and Parochial)	4,300,000
Total	36,900,000
Secondary School Students	
Public High Schools	13,200,000
Nonpublic	1,400,000
Total	14,600,000
College and University full- and part-time students enrolled for credit toward degrees	
Public Institutions	3,400,000
Nonpublic	2,000,000
Total	5,400,000
Total Students Enrolled	56,900,000



Cost (in billions)

Current Expenditures and Interest	
Elementary and Secondary Schools	
Public	532.7
Nonpublic	3.8
Higher	
Public	12.0
Nonpublic	7.7
Capital Outlay	
Elementary and Secondary Schools	
Public	5.9
Nonpublic	0.6
Higher	
Public	2.6
Nonpublic	0.4
Total	564.7

Figures are based on latest available estimates from the U.S. Office of Education and the National Education Association.

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Teachers

Elementary School Teachers	
Public	[illegible]
Nonpublic	157,000
Secondary School Teachers	
Public	[illegible]
Nonpublic	82,000
College and University Teachers	
Public	333,000
Nonpublic	183,000
Total	2,575,000

Administrators and Supervisors

Superintendents of Schools	13,106
Principals and Supervisors	119,365
College and University Presidents	2,483
Other College Administrative and Service Staff	82,000
Total	216,954

[illegible]	88,556
[illegible]	81,203
Universities, Colleges, and Junior Colleges	2,483
Total	172,242

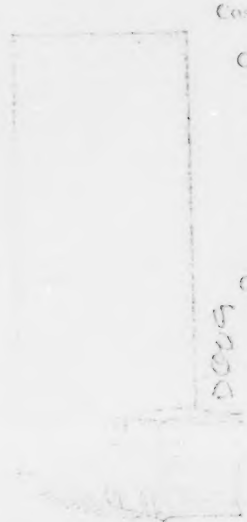
School Districts 20,440

Board Members

Local School Board Members	106,806
State Board Members	500
College and University Trustees	25,000
Total	132,306

Students

Pupils in Elementary Schools (Kindergarten through eighth grade)	
Public Schools	32,600,000
Nonpublic (Private and Parochial)	4,300,000
Total	36,900,000
Secondary School Students	
Public High Schools	13,200,000
Nonpublic	1,600,000
Total	14,800,000
College and University full- and part-time students enrolled for credit toward degrees	
Public Institutions	5,100,000
Nonpublic	2,000,000
Total	7,100,000
Total Students Enrolled	58,800,000



Cost (in billions)

Current Expenditures and Interest	
Elementary and Secondary Schools	
Public	$32.7
Nonpublic	3.8
Higher	
Public	12.0
Nonpublic	7.7
Capital Outlay	
Elementary and Secondary Schools	
Public	$4.9
Nonpublic	0.6
Higher	
Public	3.1
Nonpublic	0.3
Total	$64.7

Figures are based on latest available estimates from the U.S. Office of Education and the National Education Association.

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Estimated percent of illiteracy in population over 14, 1930

1. Louisiana	6.3
2. South Carolina	5.8
3. Hawaii	5.2
4. Mississippi	4.9
5. Georgia	4.5
6. Alabama	4.2
7. Texas	4.1
8. North Carolina	4.0
New Mexico	4.0
10. Arizona	3.8
11. Arkansas	3.6
12. Tennessee	3.5
13. Virginia	3.4
14. Kentucky	3.3
15. Alaska	3.0
16. New York	2.9
17. West Virginia	2.7
Florida	2.6
UNITED STATES	2.6
19. Rhode Island	2.4
20. New Jersey	2.2
Massachusetts	2.2
Connecticut	2.2
23. Pennsylvania	2.0
24. Oklahoma	1.9
Dist. of Columbia	1.9
Maryland	1.9
Delaware	1.9
29. Illinois	1.8
California	1.8
30. Missouri	1.7
31. Michigan	1.6
32. Ohio	1.5
33. North Dakota	1.4
New Hampshire	1.4
35. Maine	1.3
Colorado	1.3
37. Wisconsin	1.2
Indiana	1.2
39. Vermont	1.1
Nevada	1.1
41. Montana	1.0
Minnesota	1.0
43. Wyoming	0.9
Washington	0.9
Utah	0.9
South Dakota	0.9
Nebraska	0.9
Kansas	0.9
49. Oregon	0.8
Idaho	0.8
51. Iowa	0.7

(Source: Census Bureau)

Pupil-teacher ratio in public schools, Fall 1965

1. Hawaii	29.8
2. Mississippi	28.7
3. Alabama	28.1
4. Tennessee	27.9
5. Georgia	27.8
6. Michigan	27.1
7. California	26.7
8. South Carolina	26.5
Utah	26.5
10. North Carolina	26.4
11. West Virginia	26.3
12. Arkansas	26.2
13. Missouri	26.0
14. Ohio	25.8
15. Louisiana	25.6
Dist. of Columbia	25.5
17. Florida	25.5
Kentucky	25.5
19. Virginia	25.0
20. Texas	24.9
Indiana	24.9
22. Pennsylvania	24.6
UNITED STATES	24.6
23. Maryland	24.5
Nevada	24.5
25. New Mexico	24.4
Maine	24.4
27. Washington	24.2
28. Oklahoma	23.9
Idaho	23.9
30. Arizona	23.8
31. Minnesota	23.4
32. Rhode Island	23.3
Illinois	23.3
New Hampshire	23.3
35. Connecticut	23.0
36. Massachusetts	22.7
37. Delaware	22.6
38. Colorado	22.3
Wisconsin	22.3
Alaska	22.3
41. New York	21.8
Montana	21.8
New Jersey	21.8
44. Vermont	21.7
45. Iowa	21.5
Oregon	21.5
47. Nebraska	20.7
48. North Dakota	20.5
49. Wyoming	20.3
50. South Dakota	19.7
51. Kansas	19.0

Source: Office of Education

Median school years completed by persons 25 years old and older, 1960

	All	White	Non-white
1. South Carolina	8.7	10.3	5.9
Kentucky	8.7	8.7	8.2
3. West Virginia	8.8	8.8	8.4
Tennessee	8.8	9.0	7.5
Louisiana	8.8	10.5	6.0
6. North Carolina	8.9	9.8	7.0
Mississippi	8.9	11.0	6.0
Arkansas	8.9	9.5	6.5
9. Georgia	9.0	10.3	6.1
10. Alabama	9.1	10.2	6.5
11. North Dakota	9.3	9.3	9.4
12. Missouri	9.6	9.8	8.7
13. Virginia	9.9	10.8	7.6
14. Rhode Island	10.0	10.0	8.5
15. Pennsylvania	10.2	10.3	8.5
16. Wisconsin	10.4	10.4	9.0
Texas	10.4	10.8	8.1
South Dakota	10.4	10.5	8.6
Oklahoma	10.4	10.7	8.6
Maryland	10.4	11.0	8.1
21. Illinois	10.5	10.7	9.0
UNITED STATES	10.6	10.9	8.2
(U.S. 1960)	11.7		8.9
22. New Jersey	10.6	10.8	8.8
23. New York	10.7	10.8	9.4
24. Minnesota	10.8	10.8	9.1
Michigan	10.8	11.0	9.1
Indiana	10.8	10.9	9.0
27. Vermont	10.9	10.9	10.5
Ohio	10.9	11.0	9.1
New Hampshire	10.9	10.9	11.7
Florida	10.9	11.6	7.0
31. Maine	11.0	11.0	10.7
Connecticut	11.0	11.1	9.1
33. Delaware	11.1	11.6	8.4
34. New Mexico	11.2	11.5	7.1
35. Iowa	11.3	11.3	9.5
Hawaii	11.3	12.4	9.9
Arizona	11.3	11.7	7.0
38. Nebraska	11.6	11.7	9.6
Montana	11.6	11.7	8.7
Massachusetts	11.6	11.6	10.3
41. Kansas	11.7	11.8	9.6
Dist. of Columbia	11.7	12.4	9.8
43. Oregon	11.8	11.8	9.9
Idaho	11.8	11.8	9.6
45. Wyoming	12.1	12.1	9.3
Washington	12.1	12.1	10.5
Nevada	12.1	12.2	8.8
Colorado	12.1	12.1	11.2
California	12.1	12.1	10.5
Alaska	12.1	12.4	6.6
51. Utah	12.2	12.2	10.1

(Source: Census Bureau)

Estimated current expenditure per pupil in average daily attendance in public schools, by State, 1965-66

1. Mississippi	$317
2. South Carolina	359
3. Alabama	365
4. Tennessee	391
5. West Virginia	397
6. Kentucky	375
7. Arkansas	376
8. North Carolina	379
9. Georgia	384
10. Idaho	400
11. Maine	410
12. Nebraska	415
13. Virginia	424
14. Florida	439
15. Texas	448
16. Utah	456
17. North Dakota	460
18. New Hampshire	479
19. Louisiana	481
Oklahoma	481
21. Missouri	485
22. Ohio	503
23. South Dakota	507
Vermont	507
25. Kansas	511
26. Indiana	512
27. Colorado	513
28. Arizona	514
29. Hawaii	515
30. Michigan	523
31. Nevada	528
32. Massachusetts	530
UNITED STATES	532
33. Iowa	549
34. Wyoming	551
35. Maryland	552
36. Washington	556
37. Pennsylvania	565
38. Montana	567
39. Wisconsin	575
40. Rhode Island	576
41. Minnesota	577
42. Dist. of Columbia	578
New Mexico	578
44. Delaware	590
45. California	592
46. Illinois	591
47. Oregon	612
48. Connecticut	637
49. New Jersey	682
50. Alaska	775
51. New York	876

(Source: Office of Education)

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Percent of public school classroom teachers paid $5,000 or more: 1955-56

1. Mississippi	0.9
2. South Dakota	2.0
Kentucky	2.0
4. North Carolina	2.5
5. West Virginia	2.8
6. Arkansas	4.0
7. Alabama	5.0
8. Oklahoma	6.0
9. Tennessee	6.0
10. North Carolina	6.8
11. Idaho	9.5
12. Georgia	11.0
13. North Dakota	12.2
14. Nebraska	12.5
15. Maine	15.3
16. Texas	15.8
17. New Hampshire	17.1
18. Montana	17.6
19. Virginia	19.5
20. Vermont	20.0
Louisiana	20.0
22. Kansas	20.5
23. Missouri	24.0
24. Iowa	25.0
25. Florida	33.0
26. Ohio	37.5
27. Colorado	39.1
28. Wyoming	40.3
29. Wisconsin	41.0
UNITED STATES	41.3
30. Utah	42.1
31. Pennsylvania	43.4
32. New Mexico	45.9
33. Rhode Island	46.5
34. Hawaii	47.0
35. Oregon	47.7
36. Minnesota	48.0
37. Illinois	51.2
38. New Jersey	55.2
39. Maryland	56.0
Indiana	56.0
41. Michigan	56.2
42. Connecticut	56.5
43. Washington	57.0
Nevada	57.0
45. Massachusetts	58.5
45. Arizona	60.0
47. Delaware	61.0
48. California	77.0
49. New York	79.0
50. Alaska	91.8

(Source: NEA Research Division. Rankings of the States, 1956. Copyright © 1956 by the National Education Association. All rights reserved.)

Percent of voting age population participating in Presidential elections: 1956

1. Mississippi	33.3
2. Alabama	36.3
3. South Carolina	39.3
4. Virginia	42.9
5. Georgia	44.8
6. Texas	45.3
7. Louisiana	47.9
8. Arkansas	50.4
9. Tennessee	51.6
10. North Carolina	53.0
11. Florida	53.8
12. Kentucky	54.1
13. Arizona	55.5
14. Maryland	57.0
15. Nevada	57.1
16. Alaska	62.2
UNITED STATES	62.8
17. New York	63.4
18. Oklahoma	63.5
19. New Mexico	65.4
20. Kansas	65.9
Hawaii	65.9
22. California	65.1
23. Ohio	65.7
24. Maine	66.9
25. Nebraska	67.6
26. Vermont	67.9
27. Missouri	68.0
28. Pennsylvania	68.1
29. Michigan	69.1
30. New Jersey	69.2
31. Colorado	69.7
32. Oregon	69.8
33. Wisconsin	70.7
34. Rhode Island	71.1
35. Montana	71.2
36. Massachusetts	71.7
37. Connecticut	72.1
38. Iowa	72.3
39. Delaware	72.5
40. Washington	73.0
41. South Dakota	73.4
42. North Dakota	73.8
New Hampshire	73.8
44. Indiana	74.1
45. Illinois	74.3
46. Wyoming	74.5
47. West Virginia	75.1
48. Idaho	76.5
49. Minnesota	76.8
50. Utah	77.3

(Source: Dept. of Commerce)

Draftee failures on Armed Forces mental tests (by percent)

	Aug. 1950-Dec. 1950	1955
U.S. average	23.1	20.2
Mississippi	57.3	37.0
South Carolina	53.2	48.2
Louisiana	45.7	36.2
North Carolina	42.5	41.1
Alabama	42.3	38.5
Georgia	41.3	41.2
Arkansas	38.4	25.3
Tennessee	36.3	31.8
Dist. of Columbia	35.6	34.1
Virginia	33.8	28.9
Kentucky	33.5	26.5
West Virginia	31.3	27.5
Florida	31.1	25.5
Maryland	27.1	24.1
Texas	25.7	22.5
Delaware	25.4	21.9
New York	24.4	20.4
New Mexico	24.0	25.1
Hawaii	23.1	23.0
New Jersey	22.8	18.3
Maine	20.7	18.3
Arizona	19.7	20.2
Illinois	19.[illegible]	16.[illegible]
Connecticut	18.4	16.3
Missouri	17.7	17.1
Nevada	17.5	14.5
California	16.3	14.8
Pennsylvania	15.5	13.9
Oklahoma	15.3	16.5
Michigan	15.3	14.1
Ohio	14.7	14.0
Vermont	14.4	11.3
Massachusetts	14.1	12.9
Indiana	13.8	10.8
New Hampshire	13.4	9.5
Rhode Island	13.1	8.9
Alaska	12.9	13.6
Colorado	12.2	13.9
Wisconsin	10.6	9.3
South Dakota	10.6	10.5
North Dakota	9.7	9.7
Kansas	9.4	10.2
Nebraska	9.1	8.7
Idaho	8.8	8.0
Wyoming	8.6	9.2
Oregon	7.1	6.9
Minnesota	7.0	7.6
Utah	6.5	6.6
Montana	6.5	6.2
Iowa	6.4	5.1
Washington	6.3	7.0

(Source: Off. Surgeon General, Army)

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High school dropouts (percent of 1961-62 ninth graders not graduating in 1965-66)

1. Mississippi	37.7
2. Georgia	37.0
3. Kentucky	36.3
4. North Carolina	33.7
Dist. of Columbia	33.7
6. Alabama	33.6
7. Tennessee	33.2
8. New Mexico	33.1
9. South Carolina	33.0
Alaska	33.0
11. Louisiana	32.6
12. Arizona	31.9
13. Florida	31.5
14. West Virginia	31.0
15. Texas	30.5
16. Virginia	30.2
17. Arkansas	30.1
18. Kansas	29.9
19. Missouri	27.6
20. Illinois	25.8
21. Oklahoma	25.6
22. Wyoming	25.3
UNITED STATES	25.1
23. Indiana	25.0
24. Maine	24.0
25. Maryland	23.7
26. New York	23.6
27. Nevada	23.0
Vermont	23.0
29. Michigan	22.7
30. Colorado	21.8
31. New Hampshire	21.5
32. Idaho	21.4
33. New Jersey	20.8
34 Massachusetts	20.6
35. Delaware	20.4
36. Utah	19.1
37. Ohio	18.9
38. South Dakota	18.7
39. North Dakota	18.6
40. Connecticut	18.4
Rhode Island	18.4
42. Nebraska	18.1
43. Pennsylvania	17.7
44. Oregon	17.4
45. Iowa	16.8
46. Montana	15.7
47. Washington	15.1
48. Hawaii	14.5
49. Wisconsin	14.2

Average annual salaries of classroom teachers in public schools: 1965-66

1. Mississippi	$4,180
2. South Dakota	4,650
3. South Carolina	4,675
4. Arkansas	4,740
5. Kentucky	4,930
6. West Virginia	4,950
7. Tennessee	5,100
8. North Dakota	5,120
9. Alabama	5,150
10. Nebraska	5,225
11. North Carolina	5,337
12. Georgia	5,350
13. Maine	5,550
14. Vermont	5,640
15. Virginia	5,650
Oklahoma	5,650
New Hampshire	5,650
18. Idaho	5,685
19. Kansas	5,785
20. Montana	5,800
21. Missouri	5,857
22. Texas	5,950
23. Louisiana	6,030
24. Iowa	6,050
25. Wyoming	6,119
26. Utah	6,260
27. Rhode Island	6,325
28. Ohio	6,350
29. New Mexico	6,356
30. Colorado	6,391
31. Pennsylvania	6,410
32. Wisconsin	6,425
33. Florida	6,435
UNITED STATES	6,500
34. Minnesota	6,641
35. Oregon	6,650
36. Washington	6,825
37. Michigan	6,850
38. Maryland	6,878
39. Hawaii	6,929
40. New Jersey	6,998
41. Nevada	7,025
42. Arizona	7,060
43. Indiana	7,090
44. Massachusetts	7,100
45. Illinois	7,123
46. Delaware	7,150
47. Connecticut	7,200
48. Dist. of Columbia	7,500
49. New York	7,700

1965 study (4 grades)

	Total	White	Negro
U.S. average	25.3	18.8	47.5
Dist. of Columbia	55.3	16.8	69.4
South Carolina	54.6	21.6	73.0
Mississippi	53.8	25.2	84.5
North Carolina	53.0	37.9	62.1
Tennessee	49.0	43.7	70.0
Louisiana	49.0	25.4	76.9
Virginia	45.3	34.6	73.7
Alabama	44.5	24.0	76.2
Georgia	43.2	23.5	70.1
Kentucky	39.1	38.0	59.2
Texas	38.6	32.5	60.4
West Virginia	35.5	35.	46.0
Arkansas	33.7	21.	70.9
Florida	32.5	18.4	74.4
New Mexico	29.4	29	62.1
Hawaii	28.3	28	100.0
Maryland	27.8	19	55.2
Arizona	25.9	24	63.1
New York	24.9	21	50.8
Oklahoma	23.3	19.3	60.1
Missouri	21.6	17.2	65.4
Colorado	21.2	20.0	51.3
Maine	20.9	20.9	**
Delaware	20.8	13.8	52.0
California	19.5	17.1	43.4
Michigan	18.2	17.4	46.2
Illinois	17.8	1 .4	55.5
Massachusetts	17.0	16.8	42.2
New Hampshire	16.1	16.1	**
Vermont	15.1	15.1	**
Nevada	14.9	14.4	69.2
New Jersey	14.4	10.7	45.2
Indiana	14.2	12.8	43.6
North Dakota	14.1	14.1	**
Ohio	13.9	12.9	40.3
Connecticut	13.8	1 .3	50.3
Pennsylvania	13.7	11.6	41.7
Kansas	13.5	11.8	45.9
Alaska	13.1	12.9	(50.0)
South Dakota	12.6	12.5	**
Rhode Island	12.4	12.1	29.3
Nebraska	12.1	10.9	54.7
Idaho	11.4	11.4	**
Wisconsin	9.4	8.7	55.2
Montana	8.3	8.3	(100.0)
Utah	8.2	8.1	(50.0)
Iowa	7.7	7.7	**
Wyoming	7.5	7.6	**
Oregon	7.1	7.0	57.9
Minnesota	6.9	6.9	(37.5)
Washington	5.8	5.5	23.0

() Small sample.
** Too small--figure meaningless.
Range:
Total: 5.8% (Wash.) to 55.3% (D.C.)
White: 5.5% (Wash.) to 21.6% (S.C.)

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that are becoming so.[11] This change has been accompanied in the years 1959–1967 by significant, and even accelerating, shifts in income distribution and in patterns of employment (see Tables 11 and 12). These shifts indicate the strengthening of the middle levels of American society, a development not only symptomatic of greater social egalitarianism but also significantly relevant to the political aspects of the current American transition (on which

TABLE 11. CHANGES IN INCOME DISTRIBUTION AND IN EMPLOYMENT

Percentage of Families with Income of:	1959	1963	1959–1963 Change	1967	1963–1967 Change
Over $15,000	3.1	5.4	+2.3	12.2	+6.8
$5000–$15,000	52.3	58.3	+6.0	62.7	+4.4
Under $5000	44.6	36.2	−8.4	25.1	−11.1

Based on "Consumer Income," *Current Population Reports*, Department of Commerce, August 5, 1968, pp. 2–7. The data in this table are based on [illegible] for the years 1959 and 1963. However, the report states, "However, after allowance for changes in consumer prices, family income has risen by 3½ to 4 percent in each of the last 4 years" (p. 1).

TABLE 12. CHANGES IN EMPLOYMENT IN PERCENTAGES

	White-Collar	Blue-Collar	Service	Farm
1958	42.6	37.1	11.9	8.5
1967	5.0	36.7	12.5	4.8

Source: *Manpower Report of the President*, Department of Labor, Washington, D.C., April 1968, p. 232.

more later). In addition to these over-all percentages, note should be taken of the fact that as of the end of the 1960s Americans owned close to 70 million automobiles, that 95 per cent of American households had at least one television set and 25 per cent had at least two, and that over 60 per cent of American families owned their own homes.[12] Despite the indisputable persistence of poverty in the United States, American society is achieving an unprecedented affluence that touches all classes.

That poverty besets millions of Americans has been amply documented in recent years, and the majority's indifference to

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ductivity steadily declined and has only recently risen somewhat. The Soviet rural population is underemployed, undercompensated, and underproductive. The resolution of the Soviet agricultural problem is one of the more urgent—but also ideologically more sensitive—problems on the Soviet agenda. (The technological underdevelopment of Soviet agriculture is reflected in a labor-force distribution that places the Soviet Union considerably behind the more advanced sectors of the globe.)

TABLE 9. DISTRIBUTION OF LABOR FORCE

AREA	PERCENTAGE DISTRIBUTION BY SECTOR		
	Agriculture	Industry	Services
United States	8	39	53
Western Europe	14	45	41
Oceania	23	34	43
Japan	33	28	39
USSR	45	28	27
Latin America	49	20	32

Source: *International Labor Review*, January–February 1967.

In the industrial sector, more advanced than agriculture, the remarkable achievements of Soviet science in such areas as space and weapons technology have obscured a situation that is also far from satisfactory for a modern, industrialized society. It has been estimated that the Soviet Union (allowing for the differential in actual costs) has in real terms been spending approximately as much for research and development as the United States.[28] Moreover, Soviet scientific manpower has been growing at an impressive rate and now matches that of the United States. In addition, Soviet theoretical work in a number of fields, particularly physics, has been of the first order.

Yet the over-all socio-economic benefits of the Soviet scientific effort have been relatively meager. Though Soviet leaders were quick to capitalize ideologically on their initial space successes by claiming that they proved the superiority of communism (an assertion quietly allowed to fade after the American landing on the moon), the fact remains that the Soviet Union has not been

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metropolitan Chicago on the basis of an index of occupation, sources of income, and housing type as follows (the terms are not his): upper 8.1, middle 28.5, working 45.5, and lower 19.5. Pierre Martineau "Social Classes and Spending Behavior," *The Journal of Marketing*, 23:2 (October 1958); reprinted in Martin M. Grossack, ed., *Understanding Consumer Behavior* (Boston, Christopher Publishing House, 1966, p. 130). Leonard A. Cleveland and James A. Jones constructed an index of social class on the basis of education, occupation of head of household, and total family income adjusted by number of persons in the family. ("The typical lower class person in our index has had less than an eighth grade education, is employed as an unskilled or service worker, and lives in a family whose income per person is less than the minimum wage" p. 196.) The lower East Side of New York, they found, was 44 percent lower class, 36 percent working class, and 20 percent lower-middle or above. In A. Harry Passow, ed., *Education in Depressed Areas* (New York, Columbia Teachers College, 1963). On the basis of a 5 percent sample of New Haven, Hollingshead and Redlich (*Social Class and Mental Illness*, New York, Wiley, 1958, p. 202) offer the following measures by race:

Class	*White*	*Negro*
I–II (Upper?)	11.7	1.0
III (Middle?)	26.8	4.0
IV (Working?)	50.1	36.9
V (Lower?)	17.4	58.1

Although Hollingshead and Redlich define class in terms of position in a deference hierarchy, it is noteworthy that the groups that emerge are subcultures that closely resemble the ideal types described in this book.

Lee Rainwater in *Family Design* (Chicago, Aldine, 1965, p. 24) says that the lower class (lower lower in his terminology) "represents about one-quarter of the working class and about thirteen percent of the population of a city like Chicago." This estimate was based (he writes in a personal communication) on studies using one

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...another form of W. Lloyd Warner's *Index of Status Characteristics*, especially a study by Social Research, Inc., of the Chicago metropolitan area. Richard P. Coleman, for Social Research, Inc., used two main indices, male occupation distribution and education, and background, sometimes supplemented by two others, family income and housing conditions, has prepared the following estimates on the basis of 1960 census data (the terminology is not his):

Class	All Urban Total	Non-whites	Whites
Upper	14	3	15
Middle	31	13	33
Working	39	43	38
Lower	16	41	14

(Social Research Inc., "The Urban Negro: Sampling Considerations and Statistical Overview," August 1968, p. 24.)

A U.S. Bureau of the Census report, *Socioeconomic Characteristics of the Population: 1960* (Series P-23, No. 12, July 31, 1964), combines measures of occupation, income, and education in a socioeconomic status (SES) score. If persons in the lowest 20 percent of SES scores are taken to be lower class (a janitor or kitchen worker with an income slightly below the poverty line and with seven grades of schooling would have scored near the upper limit of this class on each count), 6 percent of whites and 20 percent of nonwhites in central cities of standard metropolitan statistical areas (SMSA's) of more than 250,000 population belong to that class. For the procedure by which the scores were constructed, see U. S. Bureau of the Census, *Methodology and Scores of Socioeconomic Status*, Working Paper No. 15, 1963. The following table was prepared from tabulations run by the Census Bureau under contract for Professor Basil Zimmer of Brown University and kindly made available by him.

PERCENT DISTRIBUTION OF THE POPULATION IN SOCIOECONOMIC STATUS CATEGORIES FOR STANDARD METROPOLITAN STATISTICAL AREAS, 25[illegible] AND OVER POPULATION

	CENTRAL CITY		URBAN PART OF RING	
SES Score	*White*	*Non-white*	*White*	*Non-white*
80–99 (Upper?)	15	3	24	3
50–79 (Middle?)	47	22	50	21
20–49 (Working?)	32	55	23	54
0–19 (Lower?)	6	20	3	22

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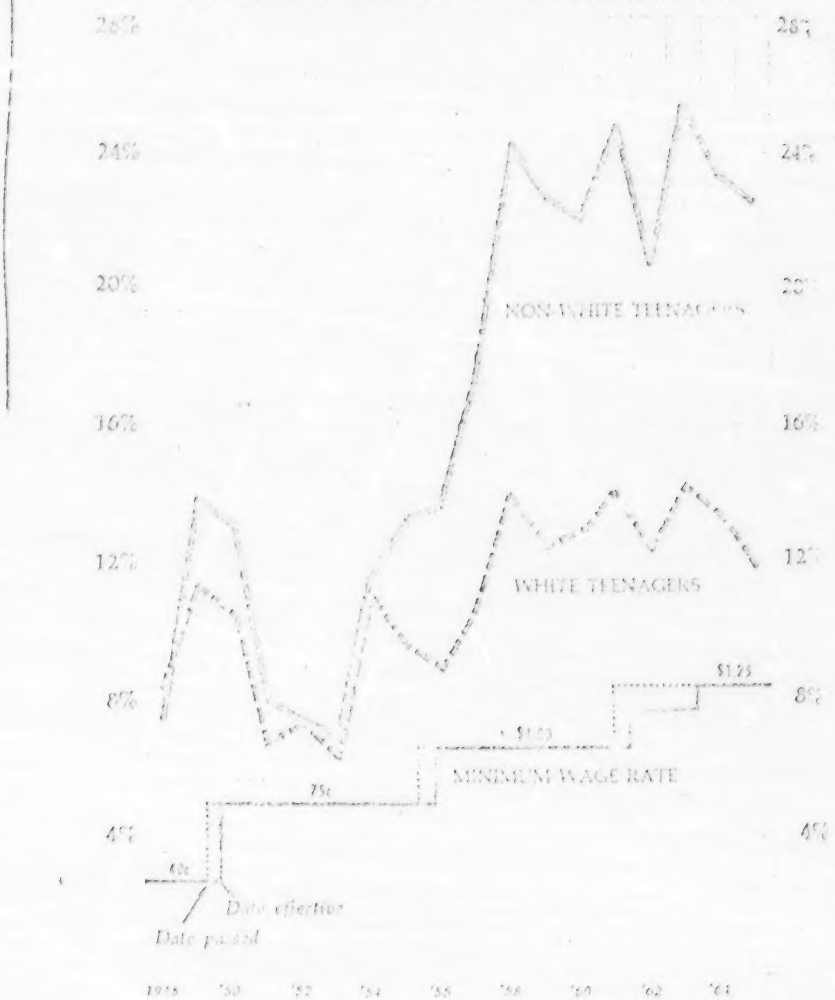
UNEMPLOYMENT RATES FOR MALE TEEN AGERS (AGES 14-19), WHITE AND NONWHITE, COMPARED WITH INCREASES IN THE MINIMUM WAGE



Source: The Free Society Association, Inc., *The Minimum Wage Issue, Who Really Pays: An Interview with Yale Brozen and Milton Friedman*, Washington, D.C., April 1966. *Source of chart data:* Bureau of Labor Statistics, U.S. Department of Labor. Reprinted by courtesy of The Free Society Association, Inc.

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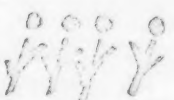
U.S. Supt. of Documents,
Profiles of Children, White House
Conference on Children, 1970

Inability to read effectively is a major educational problem.

The Extent of the "Reading Problem" in the United States, 1969.

1 of 7 Elementary School Children

1 of 4 Eleven Year Olds



1 of 4 Students in Large Elementary Schools in Large Cities.

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TABLE 4. ACCESS TO HIGHER-LEVEL EDUCATION PER 100,000 OF TOTAL POPULATION (1950, 1965)

	1950		1965	Absolute Increase 1950–1965
United States	1,508		2,840	+1,332
West Germany	256		632	+376
France	334		1,042	+708
Japan	471		1,140	+669
USSR	693		1,674	+981
Poland	473		800	+327
India	113	(1963)	284	+171
Indonesia	8	(1963)	95	+87
Brazil	98		189	+91
Algeria	52		68	+16

Source: *UNESCO Statistical Yearbook*, 1967, Table 2.10, pp. 185–99.

TABLE 5. NUMBER OF GRADUATES FROM HIGHER-LEVEL INSTITUTIONS PER 100,000 OF TOTAL POPULATION (1964)

United States	(1965) 349	Poland	81
West Germany	109	Japan	(1962) 45
France	96	Indonesia	—
Japan	233	Brazil	25
USSR	177	Algeria	—

Source: *UNESCO Statistical Yearbook*, 1967, Table 2.14, pp. 259–68.

As a result, the United States possesses a pyramid of educated social talent whose wide base is capable of providing effective support to the leading and creative apex. This is true even though in many respects American education is often intellectually deficient, especially in comparison with the more rigorous standards of Western European and Japanese secondary institutions. Nonetheless, the broad base of relatively trained people enables rapid adaptation, development, and social application of scientific innovation or discovery.* While no precise estimates are possible,

* America's scientific lead is particularly strong in the so-called frontier industries that involve the most advanced fields of science. It has been estimated that approximately 80 per cent of all scientific and technical discoveries made during the past few decades originated in the United States. About 70 per cent of the world's computers operate in the United States. America's lead in lasers is even more marked. The International Atomic Energy Agency has estimated (in its report *Power and Research Reactors in Member States*, Vienna, 1969) that by 1975 the United States will utilize more nuclear power for peaceful uses than the ten, eleven states combined (including Japan, all of Western Europe, Canada, and the Soviet Union).

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TABLE 1. RADIO AND TELEVISION RECEIVERS PER 100 POPULATION; ESTIMATED CIRCULATION OF DAILY NEWSPAPERS PER 100 POPULATION

	1960			1963		
	Radios	TV	Newspapers	Radios	TV	Newspapers
United States	930	310	328	1,034	3,5	312
Canada	592	239	272	662	28[illegible]	212*
Sweden	367	156 (1962)	599	372	277	501
United Kingdom	289	211	514	340	284	566
West Germany	287	83	307	450	213	352
Czechoslovakia	259	58	236	269	167	268
France	241	41 (1962)	252	321	151	248*
USSR	205	22	172	329	81	274
Argentina	167	21	155	308	82	128*
Japan	133	73	396	251	192	465
Brazil	70	18	54 (1964)	95	30	33
Algeria	54	5	28 (1964)	129	(1965) 13	(1965) 15
India	5	—	11	13	—	13

Source of Tables 1 and 2: *UNESCO Statistical Yearbook*, 1967, Tables 5.1; 8.2; 9.2.
* Statistics from *UN Statistical Yearbook*, 1968.

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TABLE 2. ABSOLUTE INCREASE PER 1000 POPULATION IN RADIO, TELEVISION, AND NEWSPAPER CIRCULATIONS, 1950-1966

	Radios	TV	Newspapers
United States	+393	+466	−14
Canada	+250	+457	−10
Sweden	+10	+121	+11
United Kingdom	+21	+423	−26
West Germany	+172	+[illegible]10	+25
Czechoslovakia	+10	+109	+52
France	+80	+110	−4
USSR	+124	+[illegible]59	+102
Argentina	+121	+61	−27
Japan	+118	+219	+69
Brazil	+93	+12	−21
Algeria	+25	+5	−13
India	+8	—	+2

TABLE 3. APPROXIMATE USE OF MEDIA FOR EACH OF FOUR AUDIENCE GROUPS

Percent of U.S. population that:	Mass Majority (50–60%)	Peripheral Mass (20–40%)	College Graduates (10–25%)	Elites (less than 1%)
Read any nonfiction books in the last year	5	15	30	50
Read one issue a month of *Harper's, National Review*, etc.	½	2	10	25
Read one issue a month of *Time, Newsweek*, or *U.S. News*	5	10	45	70
Read one issue a month of *Look, Life*, or *Post*	25	50	65	30
Read a daily newspaper	70	80	90	95
Read the *New York Times*	½	½	5	50
Read national or international news first in paper	10	20	30	50
Want more foreign news in paper	10	20	30	50
Listen to radio daily	60	70	85	?
Hear radio news daily	50	60	65	?
Use television daily	80	75	65	?
Watch TV news	45	45	45	?
Favor TV as news medium	60	35	20	?
Favor news as TV show	5	15	30	50

Source: *Television Quarterly*, Spring 1968, p. 47. These figures are for the most part derived from data in John Robinson, *Public Information about World Affairs*, Ann Arbor, Mich., 1967.

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TABLE 13 ANNUAL BUDGET IN MILLIONS OF DOLLARS

Industrial		Physical Health	
General Motors	20,210	Natl Cancer Inst	186
Ford	12,250	Natl Heart Assn	161
Standard Oil (N.J.)	12,250	Natl Inst. of Arthritis	141
General Electric	7,210	Natl Inst. of Neurological	119
Chrysler	5,650	Natl Inst. of Allergy	90
Mobile Oil	5,250	Natl Inst. of Child Health	66
Texaco	4,530	American Cancer Society	50
U.S. Steel	4,370	American Heart Assn	37
I.B.M.	4,250	Natl Tuberculosis Assn	27

Social and Psychological	
National Inst. of Mental Health*	5
Stanford Research Inst.*	1*
Messenger Foundation	2.5
Planning Research Corp.*	6
Inst. for Social Research	5.5
American Inst. for Research in Behavioral Sciences	5
Brookings Institution	5
Human Resources Research Office	4.5
Mental Health Research Inst.	2

Source: Thomas Jefferson Research Center, June–July 1968, p. 5.
* Approximate portion of budget allocated to social problems.

can be shaped? These questions increasingly beset all modern societies, but given the extensive social scope of contemporary American science and technology, this challenge is especially important in the United States because it affects—and potentially threatens—the most intimate aspects of American life.

Since it appears true that "this society has chosen to emphasize technological change as its chief mode of creative expression and basis for economic growth,"[29] it follows that this society's most imperative task is to define a conceptual framework in which technological change can be given meaningful and humane ends. Unless this is done, there is the real danger that by remaining directionless the third American revolution, so pregnant with possibilities for individual creativity and fulfillment, can become socially destructive.

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